



Richmond Regional Hazard Mitigation Plan



Participating Jurisdictions:

*Charles City County, Goochland County, Hanover County,
Henrico County, New Kent County, Powhatan County, the
City of Richmond and the Town of Ashland*



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Section I. EXECUTIVE SUMMARY

Beginning in 2003, the Commonwealth of Virginia encouraged the twenty-one planning districts in the commonwealth to take the lead on development of local hazard mitigation plans. These plans, which are required by the Disaster Mitigation Act of 2000 (DMA2K), help local governments determine risks and vulnerabilities and identify projects to reduce these risks. The jurisdictions covered by this plan are Charles City, Goochland, Hanover, Henrico, New Kent and Powhatan counties, and the city of Richmond. In addition, the Town of Ashland within Hanover County participated in the development of this plan.

The Richmond Regional Planning District convened a Mitigation Advisory Committee appointed by each respective locality chief administrative official to lead plan development. The Mitigation Advisory Committee met several times over the course of the planning process and worked closely with the consultant to develop the plan. Public input was sought throughout the process in accordance with DMA2K requirements.

Hazard Identification and Risk Assessment

A solid fact base is a key component of any plan. The Hazard Identification and Risk Assessment serves as the fact base for the regional hazard mitigation plan. The Hazard Identification and Risk Assessment consists of three parts:

1. Identify which hazards that could affect the Richmond region
2. Profile hazard events and determine what areas and community assets are the most vulnerable to damage from these hazards
3. Estimate losses and prioritize the potential risks to the community

Hazards were ranked by the steering committee to determine which hazards they feel have the largest impact on their communities. Certain hazards were not addressed due to the infrequency of occurrence and/or limited impact. Table I-1 summarizes the results of the hazard identification, which are explained fully in Section V of this plan.

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Table I-1. Richmond Regional PDC Planning Consideration Levels	
Hazard Identification Results	
Hazard Type	Planning Consideration Level
Flooding	Significant
Severe wind	Moderate
Severe winter storm	Moderate
Drought	Limited
Extreme heat	Limited
Hail storm	Limited
Landslides	Limited
Tornado	Limited
Wildfire	Limited
Earthquake	None

The Hazard Identification and Risk Assessment described each of the hazards in varying levels of detail consistent with each planning consideration level. In general, floods were found to be the most significant hazard.

Floods occur primarily along the James River and its tributaries. In addition, the York River has extensive floodplains. Flooding seems to occur most frequently in May, August and September. The City of Richmond and Henrico County have the largest potential exposure to flood, based on the number and value of parcels in the floodplain. In addition, these two jurisdictions are home to ninety-eight percent of the repetitive flood loss properties in the region.

Severe wind events, such as hurricanes and tornado have historically affected the area. Generally, hurricanes tend to bring flooding rather than high winds. In addition, hurricanes have been known to spawn tornadoes. In general, the tornadoes recorded in the Richmond region have typically been F0 or F1 in intensity.

Winter storms can have major impacts to the Richmond region. Over the past twenty-six years, there have been six major winter weather events in the region including four that

received Presidential Disaster Declarations. Winter storms typically cause loss of utilities, business disruption, and road closures but not large structural impacts.

Capability Assessment

The Capability Assessment evaluates the current capacity of the communities of the Richmond region to mitigate the effects of the natural hazards identified in the Hazard Identification and Risk Assessment. By providing a summary of each jurisdiction's existing capabilities, the Capability Assessment serves as the foundation for designing an effective hazard mitigation strategy. Table I-2 summarizes the Capability Self-Assessment provided by the participating jurisdictions.

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Table I-2 – Capability Self-Assessment

<i>Jurisdiction</i>	<i>Planning and Regulatory Capability</i>	<i>Administrative and Technical Capability</i>	<i>Fiscal Capability</i>	<i>Political Capability</i>	<i>Overall Capability</i>
<i>Charles City County</i>	Moderate	High	Limited	Moderate	Moderate
<i>Goochland County</i>	Moderate	Moderate	Moderate	Moderate	Moderate
<i>Hanover County</i>	Moderate	Moderate	Moderate	Moderate	Moderate
<i>Henrico County</i>	High	High	High	High	High
<i>New Kent County</i>	Limited	Moderate	Limited	Moderate	Moderate
<i>Powhatan County</i>	Moderate	Moderate	Limited	Moderate	Moderate
<i>City of Richmond</i>	Moderate	High	Limited	Moderate	Moderate
<p>High: No increase in capability needed (e.g., extensive regulations on development in place)</p> <p>Moderate: Increased capability desired but not needed (e.g., funding exists for mitigation but availability fluctuates)</p> <p>Limited: Increased capability needed (e.g., additional staff are needed to successfully implement mitigation projects)</p> <p><i>Source: Capability Assessment Survey Results</i></p>					

Mitigation Strategy

The Richmond Mitigation Advisory Committee members used the results of the Hazard Identification and Risk Assessment as well as the Capability Assessment to develop the following goals for the region and their jurisdictions:

❖ ***Goal 1:***

Reduce damage to public property.

❖ ***Goal 2:***

Develop and maintain infrastructure to ensure continued service delivery.

❖ ***Goal 3:***

Ensure new development is resilient to natural hazards.

❖ *Goal 4:*

Reduce risk to existing development.

❖ *Goal 5:*

Educate and train our citizens regarding their vulnerability to natural hazards.

❖ *Goal 6:*

Enhance the capabilities of local government to influence and possibly lessen the impact of future disasters.

In addition, the committee identified and prioritized actions for the region and individual jurisdictions. The priorities differ somewhat from jurisdiction to jurisdiction. Each jurisdiction's priorities were developed based on past damages, existing exposure to risk, community goals, and weaknesses identified in the Capability Assessment.

Plan Maintenance Procedures

The plan outlines a procedure for implementing, maintaining, and updating the plan. Based on preliminary discussions by the Mitigation Advisory Committee, the Richmond Regional Planning District Commission with continuous input from the various localities could be responsible for monitoring this plan. The Mitigation Advisory Committee representative from each jurisdiction could make annual updates to Richmond Regional Planning District Commission on the progress of the implementation of their Mitigation Action Plans. The timing of the yearly reports could coincide with either the anniversary of the approval date of this plan or another date chosen by the committee, such as the anniversary of a significant event (e.g., Hurricane Isabel). The annual progress reports will be reviewed by the Mitigation Advisory Committee who will recommend what action is needed.

In accordance with FEMA regulations, a written update will be submitted to the commonwealth and FEMA Region III in five years, unless circumstances (e.g., Presidential disaster declaration, changing regulations) require a formal update in the meantime. The public will be continually informed of changes to the plan as they occur.

Conclusion

This plan symbolizes the continued commitment and dedication of the local governments and community members of the Richmond region to enhancing the safety of residents and businesses by taking actions before a disaster strikes. While nothing can be done to prevent natural hazard events from occurring, the region is poised to minimize the disruption and devastation that so often accompanies these disasters.

Section II. INTRODUCTION

Mitigation

Mitigation is commonly defined as sustained actions taken to reduce or eliminate long-term risk to people and property from hazards and their effects. Hazard mitigation focuses attention and resources on community policies and actions that will produce successive benefits over time. A mitigation plan states the aspirations and specific courses of action that a community intends to follow to reduce vulnerability and exposure to future hazard events. These plans are formulated through a systematic process centered on the participation of citizens, businesses, public officials, and other community stakeholders.

A local mitigation plan is the physical representation of a jurisdiction's commitment to reduce risks from natural hazards. Local officials can refer to the plan in their day-to-day activities and decisions regarding regulations and ordinances, granting permits, and in funding capital improvements and other community initiatives. Additionally, these local plans will serve as the basis for states to prioritize future grant funding as it becomes available.

It is hoped that the Richmond Regional Hazard Mitigation Plan will be a tool for all community stakeholders to use by increasing public awareness about local hazards and risks, while at the same time providing information about options and resources available to reduce those risks. Teaching the public about potential hazards will help each of the area's jurisdictions protect themselves against the effects of the hazards, and will enable informed decision making on where to live, purchase property, or locate businesses.

The jurisdictions covered by this plan are Charles City, Goochland, Hanover, Henrico, New Kent and Powhatan counties, and the city of Richmond. In addition, the Town of Ashland within Hanover County participated in the development of this plan.

The Local Mitigation Planning Impetus

On October 30, 2000, President Clinton signed into law the Disaster Mitigation Act of 2000 (DMA 2000), which established a national disaster hazard mitigation grant program that would help to reduce loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural disasters.

DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act and has added a new section, §322 Mitigation Planning. Section 322 requires local governments to prepare and adopt jurisdiction-wide hazard mitigation plans for disasters declared after November 1, 2003, (subsequently revised to November 1, 2004) as a condition of receiving Hazard Mitigation Grant Program (HMGP) project grants and other forms of non-emergency

disaster assistance. Local governments must review and if necessary, update the mitigation plan every five years from the original date of the plan to continue program eligibility.

Interim Final Rule Planning Criteria

As part of the process of implementing DMA 2000, FEMA prepared an Interim Final Rule to define the mitigation planning criteria for States and communities. Published in the *Federal Register* on February 26, 2002, at 44 CFR Part 201, the Rule serves as the governing document for DMA 2000 planning implementation.

Organization of the Plan

The remaining sections of this plan document the process enumerated in DMA 2000.

Section III – Planning Process describes the Richmond region’s stakeholder involvement and defines the processes followed throughout the creation of this plan.

Section IV – Community Profile provides a physical and demographic profile of the region, looking at things such as geography, hydrography, development, people, and land uses.

Section V – Hazard Identification and Risk assessment evaluates the natural hazards likely to affect the Richmond region, and quantifies whom, what, where, and how the region might be affected by natural hazards.

Section VI – Capability Assessment analyzes each of the seven local jurisdictions’ policies, programs, plans, resources, and capability to reduce exposure to hazards in the community.

Section VII – Mitigation Strategy addresses the Richmond region’s issues and concerns for hazards by establishing a framework for mitigation activities and policies. The strategy includes a future vision statement, goals, objectives, and a range of actions to achieve the goals.

Section VIII – Plan Maintenance Procedures specifies how the plan will be monitored, evaluated, and updated, including a process for continuing stakeholder involvement once the plan is completed.

Section IX – References include a list of reports and data used to develop this plan.

Section X – Appendices are included in the last section of the plan, and contain supplemental reference materials and more detailed calculations and methodologies used in the planning process. The Appendices also provide a list of commonly used mitigation terms and acronyms.

Section III. PLANNING PROCESS

The Richmond Regional Planning District Commission is a voluntary organization of the Richmond region's nine local governments, whose primary goal is to help find regional solutions to common problems. The commission's major emphasis is in the areas of transportation and solid waste planning, and local technical assistance and information services including demographic, economic and Geographic Information Systems (GIS). The Planning District was formed by local governments in 1968 under the authority of the Virginia Area Development Act.

Beginning in 2003, the State of Virginia encouraged the twenty-one planning districts in the state to take the lead on development of local hazard mitigation plans. These plans, which are required by the Disaster Mitigation Act of 2000, help local governments determine risks and vulnerabilities and identify projects to reduce these risks. The plan developed under the auspices of the Richmond Regional Planning District includes the jurisdictions of Charles City, Goochland, Hanover (including the Town of Ashland), Henrico, New Kent, and Powhatan counties and the City of Richmond. Chesterfield County is participating in other planning efforts.

The Mitigation Advisory Committee

The Richmond Regional Planning District Commission convened a thirteen-member Mitigation Advisory Committee appointed by each respective locality chief administrative official to lead plan development. Efforts to involve county departments and community organizations that might have a role in the implementation of the mitigation actions or policies included invitations to attend meetings and serve on the MAC, e-mail project updates, strategy development workshops, and outreach through local government meetings, plus opportunities for input and comment on all draft deliverables.

After receiving funding in 2004, the Richmond Regional Planning District Commission contracted with the engineering consulting firm, Dewberry, to develop a multi-hazard mitigation plan including a Hazard Identification and Risk Assessment (HIRA) and mitigation strategies. The worked with the consultants throughout the planning process to ensure that potential stakeholders participated in the process and had opportunities for input in the draft and final phases of the plan.

The Richmond Regional Planning District Commission would like to thank and acknowledge the following persons who served on the MAC and their representative departments and organizations throughout the planning process:

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Table III-1 — Richmond Regional Mitigation Advisory Committee Members		
Name	Title/Department	Jurisdiction
William Britton	Director of Development/Development	Charles City County
Ken Brown	Chief/Fire	Goochland County
Terry Sullivan	Sergeant/Sheriff's Office	Hanover County
Lawrence Roakes	Senior Systems Administrator/Fire-EMS	Hanover County
John Trivellin	Battalion Chief/Fire-EMS	Hanover County
Drew Patterson	Code Compliance Officer/Planning	Hanover County
Bob Woods	Captain, Community Affairs & Safety/Fire	Henrico County
Larry Gallaher	Chief/Fire, Rescue, & Emergency Management	New Kent County
Floyd Greene	Emergency Management Coordinator/Department of Emergency Management	Powhatan County
Phil Warner	Deputy Emergency Management Coordinator	Powhatan County
Alan Brooke	Captain/Fire	City of Richmond
Chaya Jain	Emergency Management/Management Services	City of Richmond
Ben Johnson	Emergency Management/Management Services	City of Richmond
<i>PDC Staff</i>		
Michelle Fults	GIS Manager	Richmond Regional Planning District Commission
Jacqueline Stewart	Director of Planning & Information Systems	Richmond Regional Planning District Commission

Between September 2004 and July 2005, the MAC held four meetings and supervised work on the area's mitigation plan. The MAC members coordinated and consulted with other entities and stakeholders to identify and delineate natural hazards within the seven local jurisdictions and to assess the risks and vulnerability of public and private buildings,

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facilities, utilities, communications, transportation systems, and other vulnerable infrastructure. Table III-2 documents the meeting dates and purposes.

Table III-2— Mitigation Advisory Committee	
Meeting Dates	Summary of Discussions
November 16, 2004	Planning process was described. Commitment to the project and schedule was obtained. Discussion regarding the purpose of the plan was held.
January 6, 2004	Results of the HIRA were presented. Discussion of mission and region-wide goals for the plan were discussed and debated.
February 23, 2005	The draft mitigation plan was presented.
TBD	Final plan presentation – anticipated meeting date of January 12, 2006

Most of the communication in developing the mitigation plan occurred through telephone calls and emails. The MAC and consultant chose this avenue to best accommodate budgets and schedules. Meetings with each individual jurisdiction to discuss mitigation strategies also were held.

Public Participation and Community Input

Several opportunities were provided to the public for input and participation throughout the planning process. A public meeting was held on April 21, 2005, to allow the general public an opportunity to meet with the MAC members, ask questions, and provide comments and input on the draft mitigation plan (See Appendix A). The meeting was publicized by the news media in each of the seven jurisdictions. Prior to plan adoption, the plan was presented at a public meeting with each of the local governing bodies.

The Richmond Regional PDC posted a copy of the preliminary draft plan on its web site. In addition, the below localities solicited review and comment on the plan from the specified agencies. Further public review is planned once the plan has received preliminary approval from the Virginia Department of Emergency Management and FEMA.

Charles City County

- ❖ Department of Development

Goochland County

- ❖ Fire and Rescue
- ❖ County Administration

Hanover County and the Town of Ashland

- ❖ County Sheriff Department
- ❖ County Administration

- ❖ County Planning Department
- ❖ County Fire and EMS
- ❖ Town Police Department

Henrico County

- ❖ Public Works Department
- ❖ Planning Department
- ❖ Fire Department

New Kent County

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- ❖ Department of Fire, Rescue and
Emergency Management

Powhatan County

- ❖ Planning Department
- ❖ County Administrator's Office
- ❖ Department of Emergency
Management

Statewide Planning District Commissions

The Richmond Regional PDC requested review and comment from Virginia's 21 planning district commissions. As of November 2005, the PDC had received comments from the Piedmont Planning District Commission (Commonwealth Regional Council – PD 14).

Colleges and Universities

The Richmond Regional PDC requested review and comment on the preliminary draft plan from the following colleges and universities:

- ❖ Randolph-Macon College
- ❖ Rappahannock Community College
- ❖ Richard Bland College
- ❖ University of Richmond
- ❖ Virginia Commonwealth University
- ❖ Virginia State University
- ❖ Virginia Union University

Participating jurisdictions were encouraged to have their governing boards formally acknowledge the MAC and to appoint MAC members by resolution. All localities appointed members to the mitigation advisory committee.

Section IV. COMMUNITY PROFILE

Introduction

The Richmond Regional Planning District Commission (RRPDC) covers seven counties, one city, and one town in the east-central part of Virginia. Chesterfield County has chosen to not participate in the planning effort led by the RRPDC. The jurisdictions included in this plan are:

- | | |
|---|--------------------|
| ❖ Charles City County | ❖ Henrico |
| ❖ Goochland | ❖ New Kent |
| ❖ Hanover (including the Town of Ashland) | ❖ Powhatan |
| | ❖ City of Richmond |

The study area encompasses approximately 1,709 square miles and is bordered generally by Fluvanna, Cumberland, and Louisa counties to the west; Spotsylvania, Caroline, King and Queen, and King William counties and the Pamunkey River to the north; James City County and the York River to the east; and Chesterfield and Amelia counties and the James River to the south. The location of the Richmond Regional area within the State of Virginia is depicted in Figure IV-1.

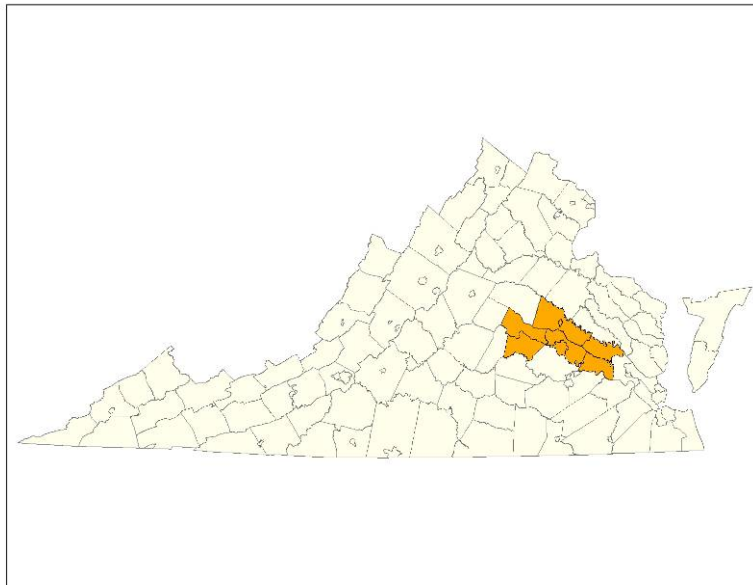


Figure IV-1 – Location of Study Area Within Virginia

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Based on total land mass, Hanover County is the largest jurisdiction in the study area with 473 square miles. Charles City County is the smallest county in the area at 183 square miles while the City of Richmond, Virginia's capitol, is the smallest member at 60 square miles.

Physiography

The District is divided between two distinct regions, the Piedmont and the Coastal Plain, which are separated by the Fall Line. The Piedmont is characterized by deeply weathered, poorly exposed bedrock and a rolling topography. The Fall Line is the easternmost extent of rocky river rapids, the point at which east-flowing rivers cross from the hard, igneous and metamorphic rocks of the Piedmont to the relatively soft, unconsolidated strata of the flat Coastal Plain. The area of the planning district in the coastal plain is gently dissected by streams but can be locally quite rugged where short, high gradient streams have incised steep ravine systems.¹ The City of Richmond lies approximately at the Fall Line, which is where the James River becomes unnavigable for about 8 miles.²

Elevations vary from just at sea level to 500 feet above sea level.³ Generally, the western portions of the study area are at higher elevations.

Hydrology

The study area lies within two major watersheds – the James and the York. The James watershed spans 10,236 square miles, the largest in Virginia, and is fed mainly by the James River, the Appomattox River, Maury River, Jackson River, and Rivanna River. The York watershed covers a much smaller area with a drainage basin of 2,669 square miles. Its main tributaries are the York River, Pamunkey River, and Mattaponi River. Several rivers flow through the study area including the James River, York River, Pamunkey River, Chickahominy River, Appomattox River and North Anna River. Numerous creeks crisscross the study area.

Land Use and Development Trends

The character of the jurisdictions in the study area varies dramatically from primarily rural to urban, sometimes within the same jurisdiction. Charles City, Goochland, New Kent, and Powhatan counties are mainly rural with some pocketed areas of suburban development. About twenty percent of Hanover County is planned suburban development with the remainder for use as rural residential and agricultural uses. Henrico County and the City of

¹ The Natural Communities of Virginia - <http://www.dcr.virginia.gov/dnh/ncoverview.htm>

² Physiographic Regions of Virginia - <http://www.virginiaplaces.org/regions/physio.html> and Geology of Virginia - <http://www.mme.state.va.us/DMR/DOCS/Geol/vageo.html>

³ FEMA. *Flood Insurance Study. Charles City County, VA, Unincorporated Areas.* September 5, 1990.
FEMA. *Flood Insurance Study. Powhatan County, VA, Unincorporated Areas.* March 1978.

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Richmond are more suburban and urban in character. Land use maps can be found in the Hazard Identification and Risk Assessment section of this plan.

Charles City County

Charles City County is a rural community located between the more urban areas of Richmond and Williamsburg. The county has a wealth of historic homes and other sites reflecting its over 200 years of history. The county is heavily forested with small residential communities scattered across the county. As of 1998, about 80% of the county was used for agricultural or forestry purposes or was otherwise in a natural state. Development tends to be clustered at road intersections or along the James and Chickahominy Rivers. Much of the undeveloped land is in large tracts under single ownership.

The county is divided into three magisterial districts. Almost half of the population is concentrated in the Harrison District that covers the western portion of the county. Most of the commercial and industrial development also is located in the western part of the county. About a third of the population lives in the central portion of the county, or the Tyler District. The remaining population is in the Chickahominy District.

Most of the housing stock in Charles City County is single family homes. The number of manufactured homes increased by about twenty percent between 1980 and 1990. Given trends in surrounding areas and the rapid increase in the cost of stick-built homes, it is likely the percentage of manufactured homes in Charles City County will continue to increase.

In 1996, forest and agricultural land accounted for about 84% of the fastland or area along the shoreline. This was a decrease from 96% in 1976. Land used for rural residential and public/semi-public uses accounted for the difference.

Two power substations provide electricity to the county. Efforts are underway to ensure that the courthouse and municipal complex are on both grids.

Goochland County

Goochland County is still mostly rural and has land left that is well-suited to agriculture and forestry operations. Development has been concentrated in the eastern part of the county. These development pressures are beginning to effect the preservation of open space and important environmental features.

Since the 1970s, Goochland County has been using zoning and the comprehensive plan to implement the village concept. These land use tools have been the impetus in shaping development that supports the county goals of preserving open space and retaining rural character. In the ideal village concept, new development is directed towards established villages and away from rural and agricultural lands.

Hanover County and the Town of Ashland

Agricultural uses dominate the land use map of Hanover County. Developed areas cluster along the I-95 corridor and within the eastern portion of the county north of I-295. These developed areas tend to be residential in nature in addition to several large concentrations of industrial uses.

Hanover/Town of Ashland has used a phased growth plan to shape development within the county. All residential designations are contained within the Suburban Service Area boundaries. Throughout the remainder of the county – the rural area – residential development can occur at a density no greater than 1 dwelling unit for every 10 acres.

Business development in general has continued within the major road corridors of the county, with the majority of new businesses being located in proximity to U.S. Route 360 in the eastern part of the county.

The Town of Ashland is located in the heart of Hanover County. Established in 1858, the early growth of the town was fueled by the railroad. In more recent times, Randolph Macon College and I-95 have influenced the town's development. The town is approximately seven square miles. Ashland is largely developed so an emphasis is placed on community stabilization and preservation. A FEMA Flood Insurance Rate Map (FIRM) exists for the area annexed by the town in 1996.

Henrico County

According to the 2010 Land Use Plan, as of 1993, the majority of the land area of the county was vacant. Portions of this land are undevelopable as it includes floodplains and other sensitive areas. Development tends to be concentrated within the I-295 loop. Of the developed portions, residential land uses (21%) dominate followed by public or semi-public uses. The planning department predicts that demand for retail, residential and office will be concentrated in western portion of county while industrial demand will be primarily in the eastern portion.

New Kent County

Rural land uses dominate New Kent's landscape. Commercial centers are located at Bottoms Bridge, Providence Forge and Eltham, all of which are complemented by nearby residences. There are smaller clusters of residential and commercial development at Lanexa, Barhamsville, and Quinton. New Kent Courthouse has few commercial uses but is a center for government and institutional uses with houses mixed in or nearby. Another mixed-use center, on a larger scale, is emerging at the Kentland development surrounding Colonial Downs; most of its planned development has yet to materialize.

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Residential development is clustered in a number of subdivisions of various types, but is also widely scattered along rural roads. The bulk of residential development is located in the western third of the county. Areas around Lanexa and the Diascund Creek Reservoir have the greatest concentration in the eastern part of the county.

The comprehensive plan calls for concentrating development in mixed-use village centers. The exception is industrial uses, which should take advantage of the large amount of vacant property along I-64 and Route 33.

Powhatan County

Powhatan County is one of the fastest growing localities in the Richmond region with a population approaching 25,000 based on 2003 estimates. In spite of the growth trends, the county strives to maintain rural character by encouraging residential development at low densities – one dwelling per five acres with higher densities allowed only where public utilities may be provided. The county has also experienced commercial and industrial growth along U.S. 60 where public utilities are available. With the opening of Rt. 288, the county should continue to experience growth across all use types in the coming years.

City of Richmond

Land use patterns are long-established and have been reinforced by city planning efforts. The city is mostly developed with limited space for new development. Residential uses dominate the city with commercial service centers spread throughout. Open spaces also can be found throughout the city.

Industrial uses are concentrated in four areas: I-95/James River corridor; west of Jefferson Davis highway to the CSX railroad; Scott's Addition and Hermitage Business park; and the Shockoe Valley.

Future development efforts will focus on redeveloping blighted and vacant properties. In addition, planning efforts are underway to stabilize declining neighborhoods. Particular attention is being paid on minimizing the conflicts between residential and non-residential uses.

Climate

The present-day climate of Virginia is generally classified as humid subtropical.⁴ Average temperatures in the Richmond region are about 76 degrees Fahrenheit in the summer and 39 degrees in the winter. Average annual rainfall is around 43 inches. Average snowfall ranges from 12 to 17 inches annually.

⁴ The Natural Communities of Virginia - <http://www.dcr.virginia.gov/dnh/ncoverview.htm>

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Population

The total population of the jurisdictions included in this study is 606,038 (as of the 2000 census). Between 1990 and 2000, Powhatan County saw the greatest increase in population with a growth rate of 46%. At the other end of the spectrum, the City of Richmond saw a slight decline in population (-2.4%). Table IV-1 shows the population breakdown by jurisdiction with the associated growth rate and number of persons per household.

Table IV-1 – Population by Jurisdiction							
	Charles City County	Goochland County	Hanover County (incl. Town of Ashland)	Henrico County	New Kent County	Powhatan County	City of Richmond
Population, 2000	6,926	16,863	86,320	262,300	13,462	22,377	197,790
Population, percent change, 1990 to 2000	10.30%	19.10%	36.40%	20.40%	28.60%	46.00%	-2.40%
Persons per household, 2000	2.59	2.51	2.71	2.39	2.65	2.74	2.21
Population, 2004 (provisional)*	7,000	18,600	94,800	279,600	14,800	25,400	192,900
Source: 2000 U.S. Census - http://www.census.gov *Cooper Wheldon Center, University of Virginia - www.coopercenter.org/demographics							

Race and Sex

According to the 2000 Census, slightly over half of the population in the study area is female. The majority of the population reported to be of a single race (98.7%). Of the total population reporting one race, 62.1% (376,478) were White and 2.1% were Asian (12,710). The percentage of the population reporting that they are Black or African American was 33% (200,034), higher than the average for Virginia (19.6%). Only 2.1% of the population (12,586) reported to be of Hispanic origin.

Language

About 5% (27,726) of the residents in the study area were foreign-born and almost 7% (41,659) of the population reported that they spoke a language other than English at home. These statistics indicate there might be a significant portion of the community that might

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require special consideration when developing hazard reduction and outreach strategies for the community.

Age

Another type of special needs group is characterized by age. Six percent (39,224) of the population is under the age of five while 24% (145,157) is under the age of 18. Additionally, 12.2% (73,909) of the population is over the age of 65. These figures are similar to the state averages. Maps showing these age breakdowns can be found in Appendix B.

Education

About 82% (496,987) of residents graduate from high school and more than 30% (186,818) hold bachelor's degrees or higher. These statistics are slightly higher than the averages for the state. These numbers, coupled with the population characteristics described in the previous paragraph are important to keep in mind when developing public outreach programs. The content and delivery of public outreach programs should be consistent with the audiences' needs and ability to understand complex information.

Income

As of 2000, the average median household income was approximately \$49,453, about 6% more than the state average (\$46,677) according to the U.S. Census. Maps depicting the median income of census tracts can be found in Appendix B. The average per capita income of \$23,879 is on par with the state per capita income of \$23,975 and above the national per capita income of \$21,587. About 10.8% (65,530) of residents within the Richmond Regional study area live below the poverty line. This rate is slightly lower than that of the national rate of 11.3% but slightly above the state rate of 9.6%. These numbers may indicate that a significant portion of the population will not have the resources available to them to undertake mitigation projects that require self-funding. Maps showing the percentage of the population under the poverty line can be found in Appendix B.

Income levels between the jurisdictions included in the study area vary greatly. Table IV-2 shows the breakdown by jurisdiction. As the table illustrates, the City of Richmond has significantly lower median and per capita incomes and a significantly higher poverty rate than the rest of the study area. In addition, Charles City County has the lowest per capita income and a significant poverty rate.

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Table IV-2 – Income Characteristics by Jurisdiction

	Charles City County	Goochland County	Hanover County (incl. Town of Ashland)	Henrico County	New Kent County	Powhatan County	City of Richmond
Median household income, 1999	\$42,745	\$56,307	\$59,223	\$49,185	\$53,595	\$53,992	\$31,121
Per capita money income, 1999	\$19,182	\$29,105	\$25,120	\$26,410	\$22,893	\$24,104	\$20,337
Persons below poverty, percent, 1999	10.60%	6.90%	3.60%	6.20%	4.90%	5.70%	21.40%

Source: 2000 U.S. Census - <http://www.census.gov>

Housing

As of 2000, there were 266,510 housing units in the study area according to the U.S. Census. A large portion of the housing units are found in Henrico County and the City of Richmond. Hanover County also has a substantial number of housing units. About 27.7% are in multi-unit structures. Not surprisingly given the more urban nature of the communities, the City of Richmond and Henrico County have the highest percentage of these multi-unit structures while Powhatan, Charles City, Goochland, and New Kent counties have virtually none.

About 64.1% of residents own their own homes, slightly lower than the national average of 66.2% or the state average of 68.1%. The average, however, is skewed by the significantly lower rate of homeownership in the City of Richmond and Henrico County. Table IV-3 illustrates the housing characteristics of each jurisdiction. When considering mitigation options, special attention should be paid to the difference in capabilities between owners and renters.

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Table IV-3 – Housing Characteristics by Jurisdiction

	Charles City County	Goochland County	Hanover County (incl. Town of Ashland)	Henrico County	New Kent County	Powhatan County	City of Richmond
Housing units	2,994	7,026	34,157	116,905	5,568	8,052	91,808
Housing units in multi-unit structures	1.9%	1.2%	7.7%	27.5%	0.6%	2.1%	42.1%
Homeownership rate	84.9%	86.6%	84.3%	65.7%	88.7%	88.8%	46.1%
Median value of owner-occupied housing units	\$86,700	\$149,800	\$143,300	\$121,300	\$128,100	\$132,100	\$87,300
<i>Source: 2000 U.S. Census - http://www.census.gov</i>							

Business & Labor

The diversity of the study area is reflected in the business sector. While the Richmond region is home to six Fortune 500 companies, the outlying area of the region is primarily rural with limited commercial development. The Fortune 500 companies are:

- ❖ Carmax
- ❖ Circuit City
- ❖ Dominion Resources
- ❖ Owens & Minor
- ❖ Performance Food Group
- ❖ The Brinks Company

Table IV-4 presents information on each jurisdiction's top employment sectors. The five most represented sectors (as of 1997) are

- ❖ Accommodation & foodservices
- ❖ Administrative & support & waste management & remediation services
- ❖ Health care & social assistance
- ❖ Professional, scientific, & technical services
- ❖ Retail trade

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Table IV-4 – Economic Characteristics by Jurisdiction

Sector	Establishments	Sales, receipts or shipments (\$1,000)	Annual payroll (\$1,000)	Paid employees
Charles City County				
Manufacturing	10	62,231	16,023	680
Retail trade	6	3,346	280	24
Real estate & rental & leasing	5	2,718	341	16
Other services (except public administration)	5	901	180	22
Administrative & support & waste management & remediation services	8	Did not disclose	Did not disclose	(20-99)
Accommodation & foodservices	6	Did not disclose	Did not disclose	(20-99)
Goochland County				
Wholesale trade	25	72,807	4,898	168
Retail trade	50	72,503	6,710	391
Administrative & support & waste management & remediation services	21	8,428	4,770	261
Health care & social assistance	18	4,459	2,406	100
Accommodation & foodservices	15	3,879	1,098	173
Hanover County (including the Town of Ashland)				
Wholesale trade	240	3,044,471	150,244	4,199
Retail trade	309	830,043	80,607	4,693
Manufacturing	150	579,724	111,772	3,803
Health care & social assistance	124	70,811	35,318	1,273
Professional, scientific, & technical services	194	69,662	24,586	769
Accommodation & foodservices	110	68,999	19,177	2,053

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Table IV-4 – Economic Characteristics by Jurisdiction

Sector	Establishments	Sales, receipts or shipments (\$1,000)	Annual payroll (\$1,000)	Paid employees
Other services (except public administration)	180	63,981	20,593	1,032
Henrico County				
Wholesale trade	474	5,902,451	309,989	7,602
Retail trade	1,148	2,974,355	302,444	19,119
Manufacturing	216	2,432,264	379,002	10,857
Health care & social assistance	565	559,280	280,467	8,260
Professional, scientific, & technical services	726	519,430	238,503	5,767
Administrative & support & waste management & remediation services	351	367,032	154,669	10,295
Accommodation & foodservices	458	350,647	96,796	9,892
New Kent County				
Retail trade	39	53,655	4,914	412
Health care & social assistance	10	17,380	8,993	315
Accommodation & foodservices	14	4,799	1,457	121
Professional, scientific, & technical services	20	2,320	929	34
Arts, entertainment, & recreation	5	Did not disclose	Did not disclose	(100-249)
Administrative & support & waste management & remediation services	13	Did not disclose	Did not disclose	(20-99)
Wholesale trade	9	Did not disclose	Did not disclose	(20-99)
Powhatan County				
Health care & social assistance	13	4,187	1,985	99
Accommodation & foodservices	9	3,920	919	124
Professional, scientific, & technical	30	3,813	1,582	55

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Table IV-4 – Economic Characteristics by Jurisdiction

Sector	Establishments	Sales, receipts or shipments (\$1,000)	Annual payroll (\$1,000)	Paid employees
services				
Administrative & support & waste management & remediation services	21	3,386	1,104	108
Other services (except public administration)	15	2,859	860	42
Arts, entertainment, & recreation	3	2,256	852	61
City of Richmond				
Manufacturing	325	11,748,251	941,202	21,879
Wholesale trade	464	5,979,460	283,523	7,572
Retail trade	1,013	1,738,092	193,461	11,579
Health care & social assistance	540	1,111,629	414,767	14,788
Professional, scientific, & technical services	732	853,683	356,033	8,113
Administrative & support & waste management & remediation services	319	363,120	216,454	11,970
Accommodation & foodservices	551	304,206	91,363	9,087
<i>Source: 1997 Economic Census - http://www.census.gov/epcd/www/econ97.html#1997</i>				

According to profiles developed by the Virginia Economic Development Partnership, major employers in the jurisdictions include:

❖ Charles City County

Warrior Xpress
Atlantic Bulk Carrier Corp.
Envelopes Only, Inc.
U.S. Remodelers Inc.
Chesapeake Structural

❖ Goochland County

Capital One
Lee Hy Paving Corp.
Hermitage Country Club
Luck Stone Corporation

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	Mega Contractors Inc. Performance Food Group Virginia Farm Bureau
❖ Hanover County	Paramount's Kings Dominion Memorial Regional Medical Center Super Value (formerly Richfood, Inc.) Tyson Farms, Inc. Randolph-Macon College
❖ Henrico County	Capital One Service, Inc. Circuit City Stores, Inc. Henrico Doctors Hospital Parham Campus Bank of America, N.A. Saint Mary's Hospital of Richmond, Inc. Infineon Technologies Richmond
❖ New Kent	AHS Cumberland Hospital Allied Pallet Company, Inc. Direct Wood Products Inc. J C Pallet Co. Chickahominy Family Practice Citizens & Farmers Bank Gammon Well Company Inc.
❖ Powhatan County	Powhatan County School Board Powhatan Correctional Center M. P. Barden & Sons Inc. Central Virginia Bank
❖ City of Richmond	MCV Hospitals Virginia Commonwealth University Philip Morris, USA Federal Reserve Bank of Richmond Chippenham Medical Center Dominion Power

Transportation

Rail and Air

The study area is at a crossroads of transportation within the state of Virginia. Rail lines radiate outward from Richmond in all directions. Both passenger (Amtrak) and freight (CSX, Richmond, Fredericksburg & Potomac, and Norfolk Southern) service is available in the planning district. The region is served by the Richmond International Airport and by Hanover County Municipal Airport and New Kent Airports, both general aviation facilities.

Roads

Three interstates intersect in the Richmond Regional area. I-64 is an east-west route running from Norfolk to Staunton, Virginia. I-95 and I-85 are north-south routes, with I-95 being the primary route along the East Coast running from Maine to Florida and I-85 the main route between Richmond and Atlanta, Georgia. In addition, Richmond is encircled by I-195, I-295, and I-895 (a toll road). A number of large U.S. Highways also service the study area. They include: US-250, US-522, US-33, US-1, US-301/SR 2, US-360, and US-60. The state road network is extensive throughout the study area. Some of the major routes include SR-6, SR-54, SR-249, SR-155, and SR-5. Henrico County is the only county in the Richmond Regional Planning District that maintains its own roads. In addition, the City of Richmond maintains its own road network.

Rivers

As described before, a number of rivers run through the study area. They include the James River, the North and South Anna Rivers, the Pamunkey River, the Chickahominy River and the York River. The James River is navigable by large ships up to the eastern portion of Richmond, which is served by the Port of Richmond. While the City of Richmond has developed an extensive portion of its waterfront along the James as open space or commercial, the majority of riverfront property in the study area is undeveloped or is developed as low-density residential.

Infrastructure

Electric

The Richmond region is served by four electricity providers: Central Virginia Electric Cooperative, Dominion Virginia Power, Rappahannock Electric Cooperative and Southside Electric Cooperative as follows:

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Table IV-5 - Electricity Providers				
Jurisdiction	Central Virginia Electric Cooperative	Dominion Virginia Power	Rappahannock Electric Cooperative	Southside Electric Cooperative
Charles City County		X		
Goochland County	X	X	X	
Hanover County (incl. Town of Ashland)		X	X	
Henrico County		X		
New Kent County		X		
Powhatan County		X		X
City of Richmond		X		
<i>Source: Virginia Economic Development Partnership, Regional and Jurisdictional Profiles.</i>				

New Kent County

The western portions of New Kent are on a “looped” scheme for electricity. If one portion of the area were to lose power, that area could tie back into the system rather easily. Virginia Power has not found it to be cost-effective to institute a similar system in the eastern portion of the county and therefore that area is prone to electrical outages.

Charles City County

Two power substations provide electricity to Charles City County. Efforts are underway to ensure that the courthouse and municipal complex are on both grids. In addition, Ingenco located at the landfill provides electricity to the power grid.

Powhatan County

Powhatan County is served by Dominion Virginia Power (61%) and Southside Electric Cooperative (39%). Power outages primarily occur because of ice or wind storms. Most of

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the Southside Electric grid is powered by one substation in the county and the majority of the Virginia Power feeds that serve the county enter on two distribution lines from substation(s) in Chesterfield.

Natural Gas

Natural gas is provided by the City of Richmond, Columbia Gas of Virginia, and Virginia Natural Gas.

Table IV-6 - Natural Gas Providers			
Jurisdiction	City of Richmond	Columbia Gas of Virginia	Virginia Natural Gas
Charles City County			X
Goochland County		X	
Hanover County (incl. Town of Ashland)			X
Henrico County	X	X	
New Kent County		X	X
Powhatan County		X	
City of Richmond	X	X	
<i>Source: Virginia Economic Development Partnership, Regional and Jurisdictional Profiles. County officials.</i>			

Telephone

Telephone service is available from Alltel, Cavalier Telephone Company, Sprint, and Verizon.

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Table IV-7 - Telephone Providers				
Jurisdiction	Alltel	Cavalier Telephone Company	Sprint	Verizon
Charles City County			X	X
Goochland County			X	X
Hanover County (incl. Town of Ashland)	X	X	X	X
Henrico County		X		X
New Kent County				X
Powhatan County				X
City of Richmond		X		X
<i>Source: Virginia Economic Development Partnership, Regional and Jurisdictional Profiles.</i>				

Public Water and Wastewater

Public water and wastewater treatment is available in the City of Richmond and Hanover (including the Town of Ashland), Henrico, New Kent, and Powhatan counties. Private well and septic systems serve Charles City and Goochland counties. Portions of Hanover, Henrico, and New Kent County also are served by private systems.

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Table IV-8 – Water and Wastewater Service Providers

Jurisdiction	Water	Wastewater
Charles City County	Charles City County Roxbury Industrial Center Mount Zion Rustic Kimages Wayside	Charles City County Roxbury Industrial Center Jerusalem Mount Zion Rustic
Goochland County	Goochland County Henrico County	Goochland County Henrico County
Hanover County (incl. Town of Ashland)	Hanover County Town of Ashland	Hanover County Town of Ashland
Henrico County	City of Richmond Henrico County	City of Richmond Henrico County
New Kent County	New Kent County	New Kent County
Powhatan County	Aqua Virginia (limited areas)	Powhatan County (limited areas)
City of Richmond	Chesterfield County City of Richmond	Chesterfield County City of Richmond Henrico County

Source: Virginia Economic Development Partnership, Regional and Jurisdictional Profiles. County Officials

Powhatan County

The Powhatan Courthouse complex, including the 911 center and the junior high school, is served by a private water system. The system relies on pumps and has no generator back-up. Following Hurricane Isabel, the loss of electrical power serving the water system in the Courthouse area had a significant negative impact on Powhatan County's ability to continue to serve the evacuation shelter and the 911 center.

Cable Television

Cable television service in the Richmond region is provided by Comcast and Cox Communication.